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ity, Emulsification and Polar Setting in Surfaces. W. D. Harkins.

The Variation of the Mobility of the Negative Ion with Temperature in Air of Constant Density. Henry A. Erikson.

Intensity of Emission of X-rays from Metals. C. S. Brainin.

Extension of Recently Published Work on Ionization Potentials. J. C. McLennan.

The Significance of Certain New Phenomena Recently Observed in Preliminary Experiments on the Temperature Coefficient of Contact Potential. (By title.) A. E. Hennings.

The Energy of Emission of Photo-electrons from Film-coated and Non-homogeneous Surface. A Theoretical Study. (By title.) A. E. Hennings.

The Possibility of a Science of Experimental Meteorology. B. P. Weinburg.

A Proposed Method for the Photometry of Lights of Different Colors. (By title.) Irwin G. Priest.

At the joint sessions on Wednesday with Sections B and C of the American Association for the Advancement of Science, the following papers were presented by invitation.

Radiation and Atomic Structure. (Presidential address before the American Physical Society.) R. A. Millikan.

The Atom and Chemical Valence. G. N. Lewis. Molecular Resonance and Atomic Structure. Robert W. Wood.

The Evolution of the Elements as Related to the Structure of the Nuclei of Atoms. Wm. D. Harkins.

The Relation of Magnetism to the Structure of the Atom. Wm. J. Humphreys.

The Relations of Magnetism to Molecular Structure. Albert P. Wills.

The Structure of Solids and Liquids, and the Nature of Interatomic Forces. Irving Langmuir.

Electromerism: A Case of Chemical Isomerism Resulting from a Difference in Distribution of Valence Atoms. Lauder W. Jones.

The following responded to invitations to discuss the papers: Wm. Duane, A. C. Crehore and K. G. Falk. Mr. Falk read the discussion of J. M. Nelson. The discussion was then thrown open and participated in by W. F. G. Swann, A. G. Webster, M. I. Pupin and others.

Many physicists attended the addresses Tuesday evening of the retiring president of the American Association for the Advancement of Science, Director W. W. Campbell, of the Lick Observatory, on "The Nebulæ," and the special program of

Section D, Friday evening, on "The Inter-relationship of Engineering and Pure Science." This session was held at the Engineering Societies Building and was followed by a reception to visiting members of the A. A. A. S.

At a short business session the result of the mail ballot for the election of officers was announced. R. A. Millikan, H. A. Bumstead, A. D. Cole and J. S. Ames was reelected president, vice-president, secretary and treasurer respectively. H. A. Wilson and G. O. Squier are the new members of the council. F. Bedell is reelected managing editor, and O. M. Stewart, N. E. Dorsey and Wm. Duane are elected on the editorial board of the *Physical Review*. The reports of the treasurer and the managing editor were presented and on motion, accepted. (These will be printed and mailed to all members.) It was announced that the next meeting of the society would probably be in connection with the Midwinter Convention of the American Institute of Electrical Engineers at New York, February 14-16.

The subscription dinner on Thursday evening was attended by about eighty, and was much enjoyed. The exhibit of new apparatus and results in the Commons Building was open from 4 to 6 P.M., daily, and on Friday afternoon the instruction and research laboratories for physics in Fayerweather Hall were on exhibition with members of the teaching staff in attendance. For these courtesies and many others the society is indebted to Director Geo. B. Pegram, who also had charge of the physics portion of the apparatus exhibit.

The attendance at this meeting was record-making, about 325 at the joint sessions on Wednesday and about 200 at most of the ordinary sessions. The number of new members elected at the meeting was forty, which also probably establishes a new record.

A. D. COLE,
Secretary

SOCIETIES AND ACADEMIES

THE BIOLOGICAL SOCIETY OF WASHINGTON

THE 562d regular and the 37th annual meeting of the society was held in the Assembly Hall of the Cosmos Club, Saturday, December 16, 1916, called to order by President Hay at 8 P.M. with 23 persons present.

Annual reports of officers and committees were submitted.

Election of officers for the year 1917 resulted as follows:

President, W. P. Hay.

Vice-presidents, J. N. Rose, A. D. Hopkins, Hugh M. Smith, Vernon Bailey.

Recording Secretary, M. W. Lyon, Jr.

Corresponding Secretary, W. L. McAtee.

Treasurer, Ned Dearborn.

Members of Council, N. Hollister, J. W. Gidley, Wm. Palmer, Alex. Wetmore, E. A. Goldman.

President Hay was elected a vice-president of the Washington Academy of Sciences.

Ex-president Evermann then gave an illustrated lecture regarding the present condition of the museum of the California Academy of Science and on its aims and aspirations. Dr. Evermann's lecture was discussed by Messrs. E. W. Nelson and Vernon Bailey.

M. W. LYON, JR.,

Recording Secretary

THE BOTANICAL SOCIETY OF WASHINGTON

THE 116th regular meeting of the Botanical Society of Washington was held in the Assembly Hall of the Cosmos Club at 8 P.M., December 5, 1916, President T. H. Kearney presiding. The program of the evening consisted of a symposium on the behavior of hybrids in different groups of plants.

Mr. G. N. Collins called attention to the increased vigor of the first generation hybrids of Indian corn which is particularly marked in strains which have been widely separated geographically. Variability was found to be somewhat more characteristic of the second than of the first generation. Horny or sweet endosperm is perhaps the best example of a simple Mendelian character pair thus far encountered in maize. Horny and waxy endosperm are completely alternative but the departures do not conform to the expected ratio.

Mr. O. F. Cook stated that when distinct types of cotton are crossed there is usually evidence of increased vigor and hardness. As a rule, the first generation is intermediate between the parents, while the splitting is pronounced in the second and later generations, but with no cases of complete return to the ancestral types. A great deal of correlation or coherence in characters is often shown in the second and subsequent generations. The increment of selection which has been developed in the parent stock previous to crossing is totally lost in hybridization.

Mr. H. V. Harlan called attention to the sharply contrasting characters in the barley group. Such characters as the following: hulled and naked, black and white, hooded and awned are inherited in the 1-3 ratio.

Among the wheats, Dr. C. E. Leighty stated that nine groups are available for hybridization. The

first generation shows increased vigor and greater uniformity. Most of the characters are intermediate. In most cases the behavior in subsequent generations can be explained on the basis of Mendel's law. Wheat hybrids are often fixed and many of the good commercial strains have originated in this way.

The behavior of wheat and rye, oats and asparagus hybrids was discussed by Mr. J. B. Norton. A distinct coherence of characters is shown when naked oats are crossed with the ordinary hulled type. If *Asparagus davuricus*, a Chinese species, is crossed with *Asparagus officinalis*, the progeny resembled in most cases the Chinese mother, especially in dropping their branches in the fall. When these hybrids were crossed back with *Asparagus officinalis*, the second generation showed none of the abscission phenomena exhibited by the mother parent, although the expected ratio was 1-1.

Resistance to wilt disease in hybrids of cotton, okra, watermelon and cowpea was discussed by Dr. W. A. Orton. In the first generation of cotton hybrids, wilt resistance is dominant; in the second generation a large percentage of non-resistant plants are produced. Selected wilt-resistant plants produced a third generation with marked increase in resistance. In the case of cowpea wilt resistance is limited to a distinct variety, "the Iron." In the case of watermelon the citron or stock melon was used in breeding for disease resistance.

In hybrids of the Soy bean Mr. W. J. Morse found the characters investigated to behave as Mendelian characters and segregate according to the Mendelian ratio. The only interrelation of characters was noted in the case of the flower and the hypocotyl, white flower being associated with green hypocotyl and purple flower with purple hypocotyl. Studies were also reported on cowpea and alfalfa.

The great differences in the behavior of citrus from other groups mentioned was discussed by Mr. Walter T. Swingle, who called attention especially to the large amount of variability occurring in the first generation hybrids. Many of these first-generation hybrids are of commercial value and may be propagated without variation from seeds which contain usually only false embryos originating from the nucellar tissues of the mother plant. In a few cases there is a true second generation.

Mr. L. C. Corbett and Mr. William Stuart took part in an informal discussion which followed the regular program.

H. L. SHANTZ,

Corresponding Secretary